

## THE TREATMENT OF CERVICITIS AND ENDOCERVICITIS BY ELECTROPHYSICAL MODALITIES\*

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Cervicitis and endocervicitis have been reported by various authors to be present in from fifty to seventy percent of all parous women and in many nulliparæ. Any condition with such a high incidence merits all the attention that can be directed toward its efficient treatment.

In this paper it is my desire to review the literature which has appeared in the past few years on these bothersome female conditions, with a view of evaluating the various modalities and different contrivances which have been advanced for their treatment. Naturally, many claims and counterclaims have been reported in the literature. I have supplemented this review of the literature with a personal opinion of the various modalities, based on my own clinical experiences.

In a previous paper (1) I reported the trend toward the use of electrophysical procedures instead of surgical intervention in these gynecological conditions. That trend has continued to such an extent that most of the reports published in the last three years describe the use of one of the diathermic or galvanic currents; surgery apparently is outmoded in this field.

Maloney (2) reported the successful application of cauterization of the cervix in the treatment of endocervicitis in the absence of acute inflammatory conditions in the uterus and adnexa. Advantages of this method, according to his report, are a minimum of scar tissue, the development of normal mucous membrane over the cauterized area and the cessation of abnormal uterine secretions, unless the leucorrhea arises from sources other than the cervix.

Kimble (3) stresses the superiority of electrocoagulation in the treatment of cervicitis and considers it a prophylactic treatment of cancer of the cervix. He is opposed to the use of cauterization during the child-bearing age, on the grounds that when it effects a cure it also produces atresia of the cervical canal. He uses a special electrode (4) which he applies satisfactorily in cervical canals of every size, shape and contour. He reported cures in 168 cases out of two hundred, the other thirty-two being cured symptomatically, long standing fibrosis of the cervix preventing return to normal size. One treatment only is required in eighty percent of the cases. Complete recovery is effected in six to eight weeks.

In a further report (5) on this special electrode Kimble describes it as including a handle about ten inches long and with a diameter about that of a four-

tain pen, the proximal six inches being rigid while the distal four inches are semirigid and capable of retaining any shape into which they are bent. Two interchangeable tips are made of insulated silver rods two inches in length. The elliptical cutting wire on one tip is two by four mm.; on the other, three by four mm. These tips permit the removal of diseased mucous membrane of the cervical canal to any desired depth, the excised tissue coming off in long narrow strips.

Baker's report (6) supports that of Kimble. After using the actual cautery for several years and with fairly good results, although atresia followed quite often in the cauterized cases, he changed to bipolar coagulation diathermy and has not seen atresia develop in any of the cases so treated. Atresia is said to be prevented by stripping the cervical canal with the cautery, leaving strips of columnar cells for epithelization, but Baker considers this practically impossible if one expects to destroy the deep cervical glands. And furthermore, there is no object in leaving columnar cells in the canal since the promotion of a squamous cell lining is the purpose of treatment.

An interesting presentation of cervicitis in connection with pregnancy and the puerperium is made by Henson (7) who sees in the care of cervicitis during pregnancy a means of reducing puerperal sepsis. He employs electrocoagulation applied by a special steel needle ten inches long and about one-sixteenth inch in width. "One end, for about seven-eighths of an inch, is triangular (three cutting edges), and terminates in a sharp point. Soft rubber tubing insulates the shaft of the needle, the seven-eighths of an inch at the spear-like end and a small space at the opposite end for the attachment of one of the cords from the diathermy outfit, being left uncovered." The construction of this needle permits its introduction into even the toughest cervical tissue in the desired direction and depth. The strength of current and the duration of flow are sufficiently low to avoid rapid dehydration and charring of the tissues, which might result in the formation of scar tissue.

Uniformly good results were reported by Frankenthal, Kobak and Krohn (8) in a series of twenty-nine cases in which the cervix was coagulated and in one case in which the cervix was desiccated; the conditions treated were erosions of varying sizes and chronic endocervicitis with Nabothian cysts. In only four of these cases did the diathermy measures fail. The Cherry tip was used in sixteen cases, the Ende tip in six cases, the biterminal with dispersing electrode on abdomen or sacrum in four cases, the Remington tip

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in three cases and monopolar desiccation in one case. These authors consider their results comparable to those obtained with the popular thermocautery. It was necessary to coagulate the cervix twice in one case in which the Cherry tip was used and cauterization was done later in one case in which coagulation was effected with the Ende tip. They advise the use of antiseptic douches for one week before using surgical diathermy in order to avoid, if possible, infections of the pelvis after coagulation.

Conization of the cervix is the best available treatment of endocervicitis, according to Rueth (9). In those cases in which pelvic pain persists after removal of the infected area, he has relieved the symptoms by subjecting the patients to several diathermy treatments through the pelvis, placing an electrode of block tin over the lower sacral region and a mesh electrode over the lower abdomen.

Ground (10) prefers solid metal ionization in the treatment of the milder chronic cases of endocervicitis with not too extensive erosions. A current of fifteen to twenty milliamperes is used for ten to fifteen minutes. The electrode which will be found to be adherent to the wall of the cervical canal after the conclusion of the treatment is readily removed by reversing the flow of current for a few minutes. Colic, which may be a complaint during the treatment, is due to the jamming of the electrode against the internal os, or to too strong a current. Many cases of aggravated erosions, hypertrophy of the cervix due to deep-seated infection, and of lacerations may be improved by ionization through clearing up of the higher infection, but the best treatment for these cases is electric coring with the cutting current. Ground prefers the cutting to the coagulating current, arguing that while the infection is destroyed by either method, the coagulating current produces considerable destruction of tissue which sloughs off during the following weeks with discharges, but with the cutting current the tissue is cut out and this procedure is followed by very little slough.

The pathology of erosions shows the fallacy of cauterizing external erosions without first considering the primary cause. Such cauterization merely bottles up the infection and may make the cervix a focus of infection. Ground further sounds a word of warning which may well be cited here. I quote from Ground: "It is my contention that no one line of treatment of procedure is effective in curing all forms of endocervicitis. No set of instruments however complicated can hope to meet all of the requirements in more than a small proportion of cases."

Stadiem (11) reported a series of 202 cases which were seen in a period of less than two years. This series included 107 cases of chronic cervicitis and endocervicitis, fifty cases of cystic cervicitis and forty-five cases of cervicitis complicated by simple, follicular or papillary erosion. In all of these cases the diseased, gland-bearing area of the canal was coned out with the cutting current, cysts being punctured with the straight electrode. The only untoward incidents in the entire series were a second degree burn over the left lumbar region due to the patient's moving suddenly, a rather profuse hemorrhage in a patient whose history later revealed a constitutional state and one case in which abortion followed, the treatment having been

applied without the knowledge that the pregnancy existed. Ten cases of cervicitis were associated with lacerations deep enough to need independent treatment, and trachelorrhaphy was done (in the hospital). The results in this series were anatomical restoration of the parts and relief of symptoms, as well as preservation of function in about ninety-five percent of the cases. Healing was complete in white patients in six weeks, colored patients healing in five weeks. Leucorrhea which invariably accompanied the infection was relieved in ninety-five percent of the cases.

Barrett (12) treated 120 cases of erosion and endocervicitis between the eighth and sixteenth weeks postpartum. These complications he found in about fifty percent of all women delivered. He coagulated the superficial infected tissues and reported healing after two weeks of excessive discharge. He prefers electrocoagulation to cauterization because of its uniform penetration. In his entire series there followed no case of stenosis of the cervical canal, and the healing in all cases was spontaneous, leaving a smooth epithelial surface with no evidence of infection.

In addition to the details reported from these sources, all the authors unanimously stress other advantages of the diathermic treatment of cervicitis and endocervicitis. The procedure is, with few exceptions, carried out under local anesthesia and does not involve the economic inconvenience attending hospitalization nor the discomfort of a surgical convalescence. Moreover, conization effects the same results as the Sturmdorf operation without impairment of the integrity of the adjacent tissues. The immediate effects are so slight that the patient is ambulatory at once and can resume her usual occupations without any noteworthy delay.

In the past two years the cold quartz light has been applied more widely in this field. Negley (13) made one of the first American contributions to the literature on this subject. He used this agent in 2,345 treatments to 197 urological patients, including ten cases of gonorrheal and postgonorrheal endocervicitis. He states that endocervicitis is so markedly benefited by cold quartz ultraviolet ray treatment that in many patients other forms of treatment may be dispensed with. The value of ultraviolet ray therapy in cervicitis is, of course, based on the well-known bactericidal action of the rays. Abramson (14) recently published a detailed preliminary report on this same subject in which he described its use in fifty cases. Most of these cases when first seen showed a profuse purulent cervical discharge with marked erosion and eversion of the lips of the cervix. Most of the cases were not more than six weeks old, untreated and accompanied by urethritis. The vegetable digestive ferment from the *Carica papaya* was used to cleanse the mucus from the cervical canal and erosions were then painted with ten percent silver nitrate solution. The official applicator was then inserted into the internal os of the canal and the initial treatment of one and one-half minutes given. The duration of the exposures was rapidly lengthened to three minutes which was found by experience to be as effective clinically as longer treatments. With few exceptions the cervical smears became permanently negative after four of five treatments, while the discharge became normal. Douches



were prohibited during the course of treatment so that the amount and character of the discharge could be observed. Cervical erosions were not healed as quickly as the discharge was checked, so cauterization was applied after several ultraviolet treatments. Cauterization being found unsatisfactory, cervical coagulation by both the Kimble-Jaros and the Cherry technics was used, and while this was more satisfactory, it has not been used in sufficient cases to permit conclusions as to the effectiveness or preferred technic. Ultraviolet treatments were given twice weekly and the average number of treatments given was twenty. Four patients complained of uterine cramps during the treatments and two bled slightly each time the applicator was removed. Abramson further compared these results with those obtained in seventy cases which had received the "usual routine treatment". The patients receiving ultraviolet therapy were under treatment only about one-seventh of the time required for effecting clinical cure with the "usual routine treatment". However, Abramson does not believe that ultraviolet treatment alone will cure all cases of erosion and discharge, but he does feel, and this is evident from the results he achieved, that in conjunction with other physiotherapeutic methods the ultraviolet ray is an extremely valuable addition to the gynecological armamentarium.

I am in agreement with Maloney that scar follows cauterization although at times negligible. Monopolar or bipolar high frequency has not produced scar or atresia in my experience. There has been observable tissue destruction following the use of these later modalities. The healed surfaces do not show characteristic scar, the appearance is that of any other portion of the cervix.

I agree with Kimble that cauterization too frequently produces atresia in all cases, except where very mild destruction is sufficient for a cure.

Abramson reporting on "cold" ultraviolet rays used other methods to effect his clinical results. He states, "in most cases the patients were not more than six weeks old;" it is rather unusual to show a purulent discharge with marked erosion and eversion of the lips of the cervix in such early cases.

In our experience with so-called cold ultraviolet (gap machine) we found it practically useless except in very early cases. We prefer the copper mercury amalgam ionization method. This was first introduced by Neiswanger forty years ago and modified by Massey. The cold ultraviolet is not cold as its name implies, since temperatures of 118° were recorded in the cervix. As a matter of record, I am reciting the results of an experiment in temperatures with this modality. The results were proven on a number of cases. We feel that no claim can be made on the action of ultraviolet alone, especially in acute gonorrheal cases as Negley made, and I quote Negley: "The value of 'cold' ultraviolet ray therapy in cervicitis is of course based on the well known bactericidal action of the rays." The temperatures are too high to be cast aside as having no effect in the results that may be claimed. The presence of these high temperatures has not been previously reported in literature in connection with this supposedly nonthermic method. In our experiment the thermometer was placed alongside the tip of the

quartz applicator, both being about one inch inside the cervix. Thermocouples placed in the cervix at varying distances from the quartz tip would perhaps give more accurate temperature readings. At a medium setting on a gap unit, the temperatures rose from zero in two and a half minutes to 110°; in five minutes to 113°; in seven and a half minutes to 111°; in ten minutes to 110°; in fifteen minutes to 110°. A shift was then made to the maximum output for the "cold" ultraviolet energy. At seventeen minutes 116°; eighteen minutes 117°; nineteen minutes 118°; twenty minutes 118°. The current was then turned off and the temperature fell in five minutes to 101°. The resulting temperatures will vary according to the extent of electrode surface exposure in the cervix. Varying sized tips to fit snugly the varying cervixes would result in higher temperatures. Twenty minutes was our longest exposure. At a given setting three to five minutes were required to reach the maximum temperature for that setting.

Our rationale in treatment follows along these lines; where pelvic pain or distress exists, we usually treat with vaginal-belt diathermy. During the course of treatments we often give an ultraviolet or ionization treatment to the cervix which improves the cervicitis and the tone of the uterus. When the abdominal pain has cleared up we continue treatment of the cervicitis or erosion by whatever method (not cauterization) seems indicated by the severity of the condition. The static wave current is frequently used as an aid to decongesting the pelvis. Where abdominal distress is absent, from one to twelve treatments will suffice in the general run of cases. One substantial coagulation clears up many of the severest cases.

My experience extends over 237 cases; 141 cases of old chronic endocervicitis with cervical erosions, more or less extensive. Many with nabothian cysts, others with more or less extensive masses of hard cicatricial tissue and varying deformity due to contracture. Ninety-nine cases were early gonococcal and non-specific cervicitis without apparent tissue changes, also cervicitis complicated by simple follicular or papillary erosions.

Thus we record the effectiveness of a physical modality in a relatively new field, another modality in another field, a further extension of an already vast range of application. And yet, each such extension inherently carries with it added responsibility on the part of the physician. This raises a phase of the subject of physical therapy which has received but scant attention in the literature, but one which, nevertheless, is destined eventually to be pushed to the forefront before physical therapy ultimately is accorded the place which it merits in the whole of the science of medicine. I refer to physical therapeutic judgment, which is just as necessary as surgical judgment. Mechanical skill is, of course, essential in both types of procedure. The finesse of judgment through long familiarity in a specialty does not necessarily qualify one to pass opinion on the value of a physical therapy modality, unless such application of physical procedure has been carried out by, or under the direction of, a physician versed in the intricacies of such physical measures. Many specialists have qualified in the physical therapeutic field, but the majority have not so qualified. The lack of



appreciation of the necessity of physical therapeutic judgment is, in a large measure at least, due to the eagerness of the representatives of manufacturers of physical therapy apparatus to sell their products. To the end of effecting a sale these sometimes overenthusiastic individuals present the operation and uses of their equipment on a purely mechanical basis. The unscrupulous are thus afforded an easy entrance into a popular and supposedly lucrative field. The charlatan is given access to a range of activity recognized by the orthodox physician. The administration of physical therapeutic treatments by these two classes and under these circumstances is largely responsible for whatever stigma has been placed on physical therapy as a part of the science of medicine. Only through the more general acquisition of physical therapeutic judgment is this being removed.

### Summary

1. The reports reviewed here definitely indicate that in the treatment of endocervicitis, cervicitis with cervical erosions, physical therapeutic measures are now achieving more satisfactory results than those which formerly followed medical or surgical procedures.

2. Monopolar (desiccation or fulguration) or bipolar (coagulation) high frequency is preferred to cauterization, and in my opinion these modalities alone will complete ninety-five percent of all types of cases.

3. Ionization is effective in some endocervicitis and erosions, but principally of the milder type.

4. These procedures may be carried out with the patient ambulatory, except in the rare case in which for some reason general anesthesia is required.

5. The use of "cold" ultraviolet rays may have a useful field in a limited number of cases.

6. Ground feels there is no one set of instruments sufficient for all types of cases. We feel that the simpler

our instruments the more ground you can cover with that set.

7. Further study and confirmation are inevitable.

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